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# The Impact of Quality Factors of Web-based Information System on the Employee Task Performance: *A Pilot Study*

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***Abstract*— In the recent years, evaluating the effectiveness of Web-based Information System (WBIS) is increasingly needed as it highly contributes to organizations, particularly on the employee task performance. This study is one of the fewest in Palestine in the field of WBIS assessment in which the effectiveness of WBIS is conceptualized and assessed in terms of employee task performance. It aims at investigating the effects of quality factors: service quality and information quality on the employee task performance. The data of the pilot study is collected from 39 of WBIS users in UNRWA. In the context of statistical inferential and analytical tests, correlation and regression analysis are used to analyze the data. The findings indicate that there are strong correlations between service quality, information quality and employee performance. Also, the findings indicate there are significant relationships between study factors. Therefore, it is expected that this study would contribute to empirical studies in the field of information system assessment.**

***Keywords*—** *Web-based Information System (WBIS), IS Effectiveness, service quality, information quality, task performance.*

## I. INTRODUCTION

Web-Based Information System WBIS as a type of Information Systems(IS) has broadly spread and becomes one of the most significant resources in providing the key organizational activities such as decision making process [1], where it is obvious that such system has a significant contribution to organization effectiveness at different levels such as individuals [2,3 and 4]. The deployment of WBIS within institutions is considered as a critical issue for every firm as it has a significant influence on the organization effectiveness and its reputation, which in turn positively affect the employee performance [5, 6]. Based on review, little is known about the conceptualization and IS assessment in terms of employee task performance [7, 8 and 3]. Therefore, this study seeks to assess the impact of quality factors: information quality and service quality on the WBIS effectiveness, whereas; the effectiveness will be assessed in terms of employee task performance. The proposed theoretical model is developed based on Delone and McLean's model 2003 [9], which is considered as the most broadly used model in evaluating such information system [10, 3 and 9].

## II. LITERATURE REVIEW

This section briefly explains what has been written about the effectiveness of information system and its related factors including information quality and service quality. This review is considered as an essential step towards the conceptualization of the factors of the proposed model. At the end of this section, the definitions of the factors are summarized inside Table1.

### A. *Effectiveness*

Concerning the definition of IS effectiveness, although the IS research are not agreed regarding a singular standard definition for IS effectiveness [11, 12 and 13], [11] defined the IS effectiveness as the degree to which the information system actually add value towards achieving organizational goals. Also, in this context [14] highlights the effective system as a value-added system which influences the user behavior positively (i.e. it improves user productivity, communication, flexibility, and information management). To conceptualize the IS effectiveness, it is highly important to mention that many researchers (e.g. [15]) mentioned that employee portals have a positive impacts on the organizations in numerous fields such as employee productivity and communication. Therefore, within the context of this research, the IS effectiveness is conceptualized as the task performance which focus on the professional part of experience.

### B. *Service Quality*

Regarding service quality, there is interchangeability in using the terms e-service quality and web service quality [16]. In addition, [9] mentioned that information system quality consists of service quality as a third critical dimension affecting the success or the effectiveness of e-commerce system which is working via internet environment. Service quality, as defined by [9], is the overall support that is provided by service provider including IS department, a new organization unit or outsourcing services providers. While [10] defined the service quality as the quality of the support provided by IS department and IT support personnel to the users of the system.

### C. Information Quality

Regarding information quality, [9, 12, 17] mentioned that information quality is one of the most important measures for examining the overall IS success. Also, [10 and **18**] highlighted that information quality is concerned with the system outputs. In this context, [19] defined the information quality as a well-known success factor which is essential to be used when assessing the overall success, especially in the context of web based systems. Within the context of our study, the definition of [9] is suggested for adaptation as the most appropriate definition. Table 1 reveals the summary of the concepts of the study factors towards the development of theoretical model.

**Table 1.** The definitions of the study factors

| Study variable | Author | Definition |
|---|---|---|
| Service Quality (SERQ) | [10] | Service quality is as a well-known quality factor which is concerned with the support provided by from IT support personnel and IS department to the users of system |
| Information Quality (IQ) | [9] | Information quality is one of the most common factors of effectiveness used to evauate the effectiveness of WBMS through focusing on the characteristics of information output. |
| WBIS Effectiveness | [14] | WBIS effectiveness is the degree to which WBMIS contributes to the organization at individual level towards the development of employee task performance. |

## III. THEORITICAL FRAMEWORK

### A. Theoritical Model

In the light of literature review and conceptualization of the three study factors: service quality, information quality and task performance, the following conceptual model is proposed in order to represent the relationships among the factors. Fig. 1 explains the proposed model which represents the basic step towards the formulation of study hypotheses.

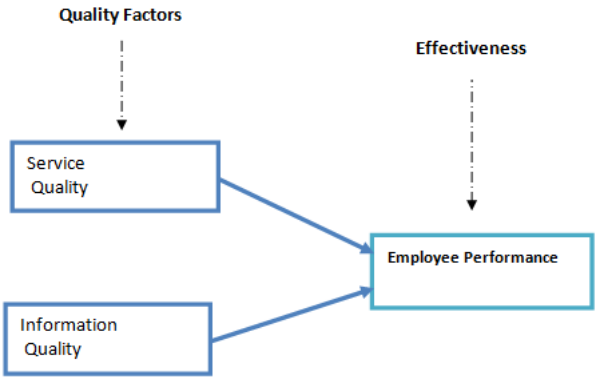



**Figure 1.** The theoretical model

### B. Hypotheses

Due to the proposed model the following hypotheses are tested:

- **$H_1$:** Service quality of WBIS has a significant impact on task performance.
- **$H_2$:** Information quality of WBIS has a significant impact on task performance.

## IV. METHODOLOGY

This section primarily focuses on the topics including sample, instrument and data analysis.

### A. sample

Since the population includes UNRWA employees at Palestine-Gaza, the pilot study consists of 39 employees working at different departments in the international agency. The quantitative approach is adopted in the data collection process. Consequently, there is an essentiality for building and developing questionnaire as a data collection tool. Accordingly, a total of 39 questionnaires are distributed and collected from the employees

### B. Instrument

In order to proceed towards the validation of the model, a questionnaire of three dimensions is designed where the dimensions cover the study factors: service quality, information quality and task performance. The measures of the questionnaire are adapted from standard scales.

### C. Data Analysis

The data collected from the pilot sample was analyzed using the Statistical Package for Social Science (SPSS 15.0) and Microsoft Excel 2010. The descriptive statistics are used to show the detailed information of the sample characteristics. Concerning the inferential statistical tests, the correlation and regression analysis are adopted for testing the significance of the associations among the model's factors.

## V. FINDINGS & DISCUSSION

With regards to results, the collected data is analyzed in order to check the proposed theoretical framework. To do so, first, the descriptive statistics are used to show the specifications of the sample. Table 2 explains the demographics of the respondents which result from the descriptive analysis

**Table 2.** Descriptive Statistics

| Characteristic | Description | Quantity | % |
|---|---|---|---|
| **Sex** | Male | 23 | 59 |
| | Female | 16 | 41 |
| **Education** | Diploma and below | 2 | 5.1 |
| | Bachelor | 29 | 74.4 |
| | Post Graduate | 8 | 20.5 |
| **Experience** | 1 - 5 Years | 2 | 5.1 |
| | 5 - 10 Years | 15 | 38.5 |
| | 11- 15Years | 10 | 25.6 |
| | >=16 | 12 | 30.8 |
| **IT Skills** | Intermediate Level | 21 | 53.8 |
| | High Level | 18 | 46.2 |
| **Post Grade** | Low Management | 13 | 33.4 |
| | Middle Management | 20 | 51.3 |
| | Top Management | 6 | 15.3 |

As a second point, the Pearson correlation coefficient is used to assess the association among study factors: information quality, service quality and WBIS effectiveness, i.e. task performance. Figure 2 explains Person correlation coefficient for the study factors.

**Correlations**

| | | IQ_Avg | SERQ_Avg | TP_Avg |
|---|---|---|---|---|
| IQ_Avg | Pearson Correlation | 1 | .776** | .836** |
| | Sig. (2-tailed) | | .000 | .000 |
| | N | 39 | 39 | 39 |
| SERQ_Avg | Pearson Correlation | .776** | 1 | .907** |
| | Sig. (2-tailed) | .000 | | .000 |
| | N | 39 | 39 | 39 |
| TP_Avg | Pearson Correlation | .836** | .907** | 1 |
| | Sig. (2-tailed) | .000 | .000 | |
| | N | 39 | 39 | 39 |

**. Correlation is significant at the 0.01 level (2-tailed).

**Figure 2.** The Pearson correlation among study factors

To summarize the correlations among the study factors, both correlations of factors and significance level are drawn inside table 3 whereas Table 3 shows the Pearson correlation.

**Table 3.** Pearson Correlations among study factors

| **Variable** | **Task Performance** | |
|---|---|---|
| | R-value | Sig(2-tailed) |
| **Service Quality** | 0.907 | 0.000 |
| **Information Quality** | 0.836 | 0.000 |
| **Performance** | … | … |

Based on correlation analysis in table 3, it is clear that there is strong correlation among model or study's factors. The significance of correlation (i.e. P-value) is 0.000 for all associations. Also, the correlation is relatively high as the value for each correlation is greater than 0.8 (i.e. R > 0.8) at high significance (P-value = 0.000). Considering the service quality, it is more correlated with performance than system quality.

The regression analysis is used in order to validate the relationships and analyze the effects of independent variables on performance. Figures 3,4 and 5 represent the regression analysis of the relationships between independent variable (i.e. information quality and service quality) and the dependent variable (task performance).

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .907[a] | .822 | .817 | .57475 | .822 | 170.692 | 1 | 37 | .000 |

a. Predictors: (Constant), SERQ_Avg

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 56.386 | 1 | 56.386 | 170.692 | .000[a] |
| | Residual | 12.222 | 37 | .330 | | |
| | Total | 68.608 | 38 | | | |

a. Predictors: (Constant), SERQ_Avg
b. Dependent Variable: TP_Avg

**Figure 3.** The regression analysis of the relationship between service quality and task performance

**Variables Entered/Removed[b]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | IQ_Avg[a] | | Enter |

a. All requested variables entered.
b. Dependent Variable: TP_Avg

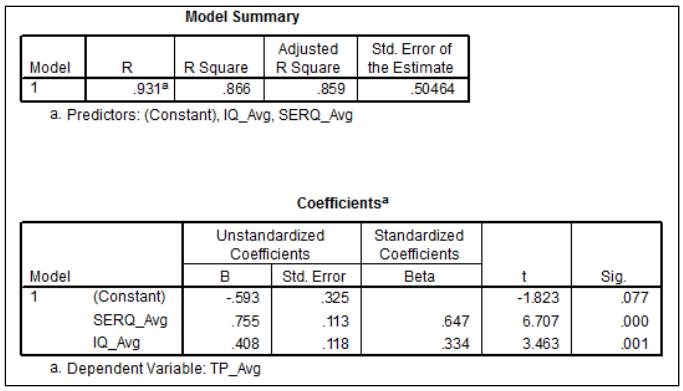
**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .836[a] | .699 | .691 | .74655 | .699 | 86.099 | 1 | 37 | .000 |

a. Predictors: (Constant), IQ_Avg

**Figure 4.** The regression analysis of the relationship between information quality and task performance

Data mentioned in Figures 3 and 4 show the linear regressions of information quality and service quality on the task performance. The test statistic of information quality and service quality are equal to 86.099 and 170.692, respectively. Therefore, the meaningfulness level is less than error level (< 0.05), and consequently, there are linear relations between the two independent variables and dependent variable. However, Hair et al. [20] highlighted that multiple regression should be used in case of multivariate analysis (i.e. two or more independent factors). Figure 5 shows the results of multiple regressions analysis.



Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .931[a] | .866 | .859 | .50464 |

a. Predictors: (Constant), IQ_Avg, SERQ_Avg

Coefficients[a]

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | -.593 | .325 | | -1.823 | .077 |
| | SERQ_Avg | .755 | .113 | .647 | 6.707 | .000 |
| | IQ_Avg | .408 | .118 | .334 | 3.463 | .001 |

a. Dependent Variable: TP_Avg

**Figure 5.** The multiple regression analysis of the relationship between quality factors and task performance

For clarity and more explanation, Table 4 is drawn to reveal summary of the results of the multiple regression analysis in which the dependent variable is regressed on the independent variables.

**Table 4.** Multiple Regression results

| | |
|---|---|
| Square of regression coefficient ($R^2$) | 0.866 |
| The association between service quality and Performance | 0.647 |
| P-Value | 0.000 |
| The association between information quality and Performance | 0.334 |
| P-Value | 0.001 |

According to table 4, it is obvious that quality factors including service quality and information quality have a significant relationship with employee task performance at high significance level (P-value = 0.000< 0.05). Generally, the value of regression coefficient (R) is relatively high( > 0.3), which in turn gives another evidence for high positive association between quality factors and task performance, whereas; the effects of independent variables: service quality, and information quality on the task performance are 0.647 and 0.334, respectively.

In addition, regarding the strength of correlation ($R^2$), service quality and information quality are strongly correlated with task performance where $R^2$ is 0.866. The value of $R^2$ indicates that a considerable percentage (86.6%) of the variance change in task performance is dependent on the influence of the two quality factors. Also, it is obvious that the service quality contributes to the task performance more than the information quality. Thus the findings of the pilot study reveal that the quality factors: Service Quality (SERQ) and Information Quality(IQ) have significant relationships with employee task performance (TP). Hence, the assumed hypotheses are supported (see table 5). Accordingly, improvement in quality level will significantly increase work performance.

**Table 5.** The summary of Hypotheses testing

| Hypothesis | R | Sig | Status |
|---|---|---|---|
| $H_1$: SERQ →TP | 0.647 | 0.000 | Supported |
| $H_2$: IQ → TP | 0.334 | 0.001 | Supported |

Thus, the results of this study indicate that the proposed model is an adoptable model, and consequently this study would contributes to the empirical studies in the field of IS assessment.

## VI. CONCLUSION

This study is one of the fewest as it investigates the impacts of quality factors on the employee task performance inside UNRWA, Palestine, Gaza. The purpose of this paper is to conceptualize and develop a new theoretical model for assessing the effectiveness of WBIS in terms of task performance. This paper primarily focuses on three points: this study draws on Web-based Information system (WBIS) literature in an attempt to broadly understand and explore the concept of effectiveness for WBMIS, and how it is measured. Second, it contributes to the theoretical literature through the conceptualization and determination of the quality factors that influence the performance of the WBIS users. Third, this study examines the relationships between quality factors and employee performance through using the statistical inferential tests: correlation and regression analysis. Based on data analysis, it is found there are strong associations among model's factors: service quality, information quality and task performance. Therefore, as the quality of the system increased the employee task performance will be increased. Finally, it is expected that this study would contribute to empirical studies in the field of IS evaluation and development.

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